GE Healthcare

Valves IV-908, PV-908

Instructions

Important user information

All users must read this entire manual to fully understand the safe use of Valves IV-908, PV-908.

WARNING!

The WARNING! sign highlights instructions that must be followed to avoid personal injury. It is important not to proceed until all stated conditions are met and clearly understood.

CAUTION!

The Caution! sign highlights instructions that must be followed to avoid damage to the product or other equipment. It is important not to proceed until all stated conditions are met and clearly understood.

Note

The Note sign is used to indicate information important for trouble-free and optimal use of the product.

CE Certifying

This product meets the requirements of applicable CE-directives. A copy of the corresponding Declaration of Conformity is available on request.

The **CE** symbol and corresponding declaration of conformity, is valid for the instrument when it is:

– used as a stand-alone unit, or

– connected to other CE-marked GE Healthcare instruments, or

– connected to other products recommended or described in this manual, and

– used in the same state as it was delivered from GE Healthcare except for alterations described in this manual.

Recycling

This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of equipment.

WARNING!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to make adequate measures.

1 Introduction

Valves IV-908 and PV-908 are motorised rotary 8-way valves. The valves are used in ÄKTA™design chromatography systems. They are powered from the ÄKTAdesign™ P-900 series system pump, and controlled from UNICORN™ control system.

The valves have 8 positions and each position connects the central port with one of the peripheral ports. The valve IV-908 is used on the low pressure side (before the pump) and PV-908 on the high pressure side (after the pump).

The valve may be used to switch between sample and buffer solutions. Two valves may be used to switch between columns.

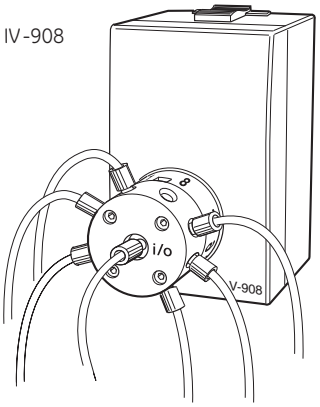
Features:

- Completely swept flow path minimises solvent or sample "memory effect".
- Flow rates up to 100 ml/min.
- All wetted parts are plastic PEEK.

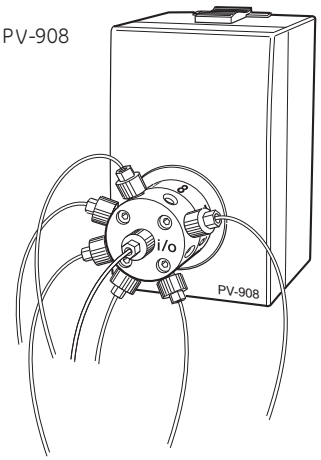
Safety

WARNING! When using hazardous chemicals, take all suitable protective measures, such as wearing protective glasses and gloves resistant to the chemicals used. Follow local regulations and instructions for safe operation and maintenance of the system.

IV-908



PV-908



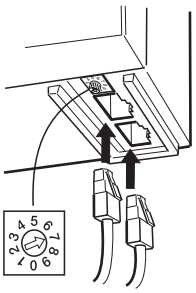
1 Introduction

2 Installation

CAUTION! Before connecting Valves IV-908 or PV-908 ensure the power is switched OFF at the system pump or for the complete system.

Unpacking

Unpack the instrument and check the items against the packing list. Inspect the items for obvious damage which may have occured during transportation.



1 Connect the valve with two UniNet cables as a part of the UniNet 2 chain.

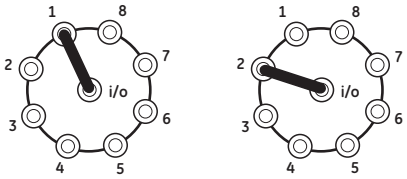
2 Set the ID-switch at the bottom to the required valve number **0–9.** The number should correspond to that used in UNICORN.
Note: All valves must have different numbers.

3 Mount the valve vertically, in the way it is shown in the user documentation of your ÄKTAdesign chromatography system.

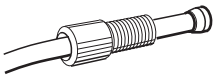
4 Apply an identification number from the labels supplied. The number should be the same as the rotary switch at the bottom of the valve. Place the number so that it is easily readable from the front.

5 Connect the tubing. The valve has one main port marked **i/o** and 8 peripheral ports equally spaced marked **1–8.**

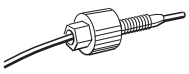
Position **1** Position **2** **etc.**



The low pressure valve IV-908 has female 5/16”–24 UNF 2B connections.



The high-pressure valve PV-908 has female UNF 10-32 2B connections.



3 Operation

The valves are controlled from UNICORN.

Storage

Overnight: The valves can be left filled with a buffer.

Overnight and Long time storage: Flush the valves with water and then fill with 20% ethanol.

4 Maintenance

CAUTION! Only spare parts approved or supplied by GE Healthcare may be used for maintaining and servicing the valves.

Period	Action
Every 12 months or when required	Change channel plate and distribution plate

Cleaning-in-place

Pump a cleaning or sanitizing agent through the valve. The standard recommendation is to pump 1 M NaOH for 30 minutes and wash out with buffer.

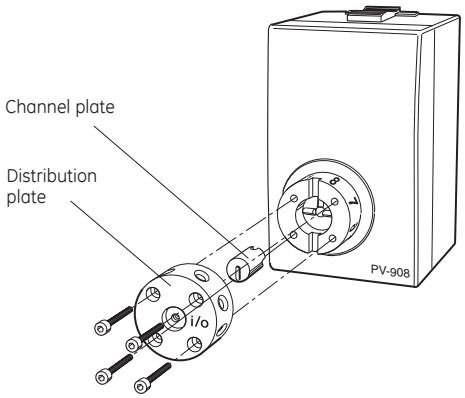
WARNING! NaOH is injurious to health. Avoid spillage.

Changing channel plate and distribution plate

A valve kit is available, see ordering information in Reference Information.

1 Ensure that the valve is disconnected from the pump and the tubing are disconnected.

2 Remove the 4 screws on the front using the supplied 3 mm Allen key. Loosen each one equally in turn so the distribution plate comes off parallel to the valve body.



3 Slide the screws out.

4 Remove the distribution plate containing the 8 peripheral ports.

5 Remove the old channel plate and insert a new one.

6 Remount a new distribution plate so that the text **i/o** is horizontal and to the right of the central tubing connection. Using the Allen key, tighten the 4 screws in turn, a little at a time, until the distribution plate is fixed to the valve body.

Recycling

This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of equipment.

5 Trouble shooting

If the suggested actions do not correct the fault, call GE Healthcare.

Fault	Action
The valve is not switching	
	1 Check the connection to the pump. The valve should be connected to the *UniNet 2* socket, not the *UniNet 1* socket.
	2 Check the ID-switch on the valve. The ID number should correspond to the number set in UNICORN.
	3 Check the UniNet cable and replace if required.
The valve is switching to wrong position	
	The valve parts may have been incorrectly assembled after replacement.
	1 Check that the distribution plate marking i/o is horizontal.
External leakage	
	1 Check the tubing connections. Tighten or replace if required.
Internal leakage	
	Internal leakage can be detected at the small hole on the underside of the valve body.
	1 Internal valve parts may be worn.Change channel plate and distribution plate according to section 4.
High back-pressure	
	1 Do cleaning-in-place according to the instructions in section 4.
	2 Change channel plate and distribution plate according to section 4.
Other faults	Contact GE Healthcare.

Recycling

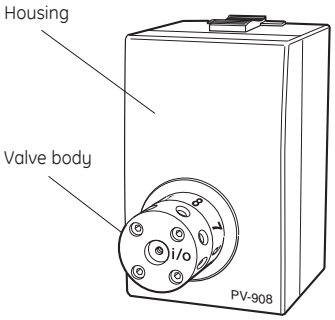
This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of equipment.

6 Reference information

Description

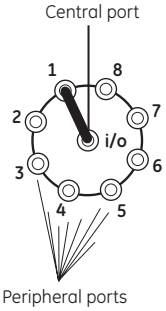
The valve consists of two main parts:

- Housing which encloses the motor and electronics.
- Valve body with a rotating 360° central core.



The main difference between the IV-908 and PV-908 is the diameter of the flow channels and the maximum pressure ratings. PV-908 has 0.8 mm channels while IV-908 has 1.2 mm channels which allow higher flow rates at lower back pressure.

As the channel plate is turned by the motor, the central port on the front is connected to one of the peripheral ports 1–8, allowing a clear liquid path.



Valve switching is controlled from UNICORN by reading the actual position of the channel plate.

The material used in the switching parts ensures both long mechanical and chemical lifetime.

The valve housing contains no user replaceable items.

Technical specifications

Operating data

Max Flow rate	
IV-908	100 ml/min
PV-908	100 ml/min
Max Pressure	
IV-908	2 MPa (20 bar, 290 psi)
PV-908	25 MPa (250 bar, 3600 psi)
Back pressure	
IV-908	< 3 kPa at 100 ml/min with water
PV-908	< 40 kPa at 100 ml/min with water
Leakage	
IV-908	< 0.1 µl/min at 2 MPa
PV-908	< 0.1 µl/min at 25 MPa
pH stability range	1–13, 1–14 (<1 day exposure)
Viscosity	Max. 5 cP

Switch time	<260 ms between two adjacent positions
Operating life time	>50 000 cycles, two adjacent positions
Environment	+4 to +40 °C 20-95% relative humidity 84–106 kPa (840–1060 mbar) atmospheric pressure

Physical data

Internal volume, in/out to port	
IV-908	26 µl
PV-908	7 µl
Flow channel diameter	
IV-908	1.2 mm
PV-908	0.8 mm
Valve principle	Motor controlled valve
Functions	Switching 8-way, 8 positions controlled from UNICORN
Degree of protection	IP 43
Wetted materials	
Channel and Distribution plates	PEEK (polyetheretherketone)
Chemical resistance	The wetted parts are resistant to organic solvents and salt buffers commonly used in chromatography of biomolecules, except 100% ethylacetate, 100% hexane and 100% tetrahydrofuran (THF)
Power requirement	32 V DC ±10% from the system pump
Power consumption	Up to 9 W
UniNet 2 address	0–9
Inlet and outlet tubing	
IV-908	5/16"-24 UNF 2B for tubing with 3/16" outer diameter
PV-908	UNF 10–32 2B "Fingertights" for capillary tubing 1/16" outer diameter
Dimensions,	
H x W x D	135 × 80 × 120 mm
Weight	1.2 kg
EMC Standards	This product meets the requirement of the EMC Directive 89/336/EEC through the harmonized standards EN 50081-1 (emission) and EN 50082-1 (immunity)

Note: The declaration of conformity is valid for the instrument when it is

- used in laboratory locations
- used in the same state as it was delivered from GE Healthcare except for alterations described in the user manual
- connected to other CE labelled GE Healthcare instruments or other products as recommended.

Accessories and spare parts

Item	Quantity per pack	Code no.
Valve IV-908 including one UniNet cable	1	18-1108-42
Valve PV-908 including one UniNet cable	1	18-1108-41
Valve kit, including channel plate and distribution plate		
IV-908	1	18-1109-07
PV-908	1	18-1109-06
Cable UniNet, 0.7 m	1	18-1109-74
Number Plates 0-9	1	18-1109-09
Mounting bracket	1	18-1109-11
Teflon™ tubing, i.d. 1/8", o.d. 3/16"	3 m	18-1112-47
Tubing connector for 3/16" o.d. tubing	10	18-1112-49
Ferrule for 3/16" o.d. tubing	10	18-1112-48
Stop plug, 5/16"	5	18-1112-50
Stop plug, 1/16"	5	18-1112-52
Union Luer female/1/16" male	2	18-1112-51
Union 1/16" female/M6 male	6	18-1112-57
Union M6 female/1/16" male	8	18-1112-58
PEEK tubing, i.d. 0.75 mm, o.d. 1/16"	2 m	18-1112-53
Teflon tubing, i.d. 0.75 mm, o.d. 1/16"	2 m	18-1112-54
PEEK tubing, i.d. 1.0 mm, o.d. 1/16"	2 m	18-1115-83
Fingertight connector 1/16"	10	18-1112-55

www.gehealthcare.com

GE Healthcare Bio-Sciences AB
Björkgatan 30
751 84 Uppsala
Sweden

GE Healthcare Bio-Sciences AB, a General Electric Company.

GE Healthcare Europe GmbH
Munzinger Strasse 5, D-79111 Freiburg, Germany

GE Healthcare UK Ltd
Amersham Place, Little Chalfont, Buckinghamshire, HP7 9NA, UK

GE Healthcare Bio-Sciences Corp
800 Centennial Avenue, P.O. Box 1327,
Piscataway, NJ 08855-1327, USA

GE Healthcare Bio-Sciences KK
Sanken Bldg. 3-25-1, Hyakunincho
Shinjuku-ku, Tokyo 169-0073, Japan

Asia Pacific Tel: +85 65 62751830 Fax: +85 65 62751829 • Australasia Tel: +61 2 8820 8299 Fax: +61 2 8820 8200 • Austria Tel: 01 /57606 1613 Fax: 01 /57606 1614 • Belgium Tel: 0800 73 890 Fax: 02 416 8206 • Canada Tel: 1 800 463 5800 Fax: 1 800 567 1008 • Central, East, & South East Europe Tel: +43 1 972 720 Fax: +43 1 972 722 750 • Denmark Tel: +45 70 25 24 50 Fax: +45 45 16 2424 • Eire Tel: 1 800 709992 Fax +44 1494 542010 • Finland & Baltics Tel: +358 9 512 3940 Fax: +358 9 512 39439 • France Tel: 01 69 35 67 00 Fax: 01 69 41 98 77 • Germany Tel: 0800 9080 711 Fax: 0800 9080 712 • Greater China Tel: +852 2100 6300 Fax: +852 2100 6338 • Italy Tel: 02 26001 320 Fax: 02 26001 399 • Japan Tel: 81 3 5331 9336 Fax: 81 3 5331 9370 • Korea Tel: 82 2 6201 3700 Fax: 82 2 6201 3803 • Latin America Tel: +55 11 3933 7300 Fax: +55 11 3933 7304 • Middle East & Africa Tel: +30 210 96 00 687 Fax: +30 210 96 00 693 • Netherlands Tel: 0800-82 82 82 1 Fax: 0800-82 82 82 4 • Norway Tel: +47 815 65 777 Fax: +47 815 65 666 • Portugal Tel: 21 417 7035 Fax: 21 417 3184 • Russia & other C.I.S. & N.I.S Tel: +7 495 956 5177 Fax: +7 495 956 5176 • Spain Tel: 902 11 72 65 Fax: 935 94 49 65 • Sweden Tel: 018 612 1900 Fax: 018 612 1910 • Switzerland Tel: 0848 8028 10 Fax: 0848 8028 11 • UK Tel: 0800 515 313 Fax: 0800 616 927 • USA Tel: +1 800 526 3593 Fax: +1 877 295 8102

Elanders Österåla 2006

imagination at work

56-8101-02 AE 05/2006